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United States
Department of
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Forest Service

North Central
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Station

Research Note NC-352
1990

# Pulpwood Production in the Lake States, 1989

**Ronald L. Hackett**[1]

ABSTRACT.—Lake States pulpwood production climbed to a record 8.54 million cords in 1989. Pulpwood production is shown by county and species group in Michigan, Minnesota, and Wisconsin.

KEY WORDS: Residue, Michigan, Minnesota, Wisconsin.

Pulpwood production[2] in the Lake States—Michigan, Minnesota, and Wisconsin—rose to a record 8.54 million cords in 1989 from 8.14 million cords in 1988. Wisconsin produced 3.16 million cords, Michigan produced 3.12 million cords, and Minnesota produced 2.26 million cords.

Ninety-three percent of the pulpwood harvested came from roundwood (including chips from roundwood); the remainder came from mill residue such as slabs, edgings, veneer cores, and chips from these materials. Production from softwood and hardwood residue by State was:

| State | Softwood | Hardwood |
|---|---|---|
| | (Hundred standard cords, unpeeled) | |
| Michigan | 793 | 1,819 |
| Minnesota | 287 | 497 |
| Wisconsin | 591 | 2,325 |

Major species harvested were aspen (3.9 million cords), pine (935 thousand cords), maple (820 thousand cords), birch (636 thousand cords), and balsam fir (409 thousand cords).

Lake States loggers produced 629 thousand cords of whole tree chips (WTC), 4 percent less than in 1988 and 7 percent of total pulpwood output in 1989. Michigan was the major WTC producer with 477 thousand cords, followed by Minnesota with 91 thousand cords and Wisconsin with 60 thousand cords.

Counties harvesting more than 130 thousand cords each were Delta, Menominee, Dickinson, Iron, Marquette, and Ontonagon in Michigan; Koochiching, St. Louis, Beltrami, Cass, and Itasca in Minnesota; and Forest, Lincoln, Marinette, Oneida, Bayfield, Price, and Sawyer in Wisconsin. These 18 counties contributed 46 percent of the pulpwood produced from roundwood in the Lake States in 1989.

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[2]Includes logs, bolts, and wood residue used in manufacturing particleboard, waferboard, oriented strand board, and medium density fiberboard.

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*Table 1.--Lake States pulpwood production from roundwood by county and species, 1989*
*(In hundred standard cords, unpeeled)*

**MICHIGAN**

| Unit 1/ and County | All species | Pine | Spruce | Balsam fir | Hemlock | Tamarack | Cedar | Aspen | Birch | Oak | Maple | Other hardwoods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **E. UPPER PENINSULA** | | | | | | | | | | | | |
| Alger | 977 | 63 | 37 | 59 | 49 | 2 | 17 | 128 | 138 | 26 | 332 | 126 |
| Chippewa | 799 | 100 | 49 | 61 | 23 | 2 | 16 | 349 | 49 | 5 | 97 | 48 |
| Delta | 2,067 | 120 | 247 | 308 | 65 | 13 | 89 | 289 | 303 | 21 | 359 | 253 |
| Luce | 551 | 51 | 65 | 92 | 19 | 4 | 26 | 65 | 68 | 5 | 122 | 34 |
| Mackinac | 794 | 66 | 74 | 79 | 16 | 2 | 19 | 182 | 126 | 8 | 143 | 79 |
| Menominee | 1,495 | 41 | 105 | 157 | 30 | 7 | 38 | 477 | 276 | 15 | 223 | 126 |
| Schoolcraft | 997 | 84 | 82 | 126 | 29 | 5 | 37 | 217 | 110 | 11 | 179 | 117 |
| Total | 7,680 | 525 | 659 | 882 | 231 | 35 | 242 | 1,707 | 1,070 | 91 | 1,455 | 783 |
| **W. UPPER PENINSULA** | | | | | | | | | | | | |
| Baraga | 916 | 29 | 21 | 37 | 20 | 2 | 10 | 220 | 138 | 24 | 330 | 85 |
| Dickinson | 1,455 | 73 | 144 | 196 | 51 | 7 | 55 | 510 | 178 | 11 | 159 | 71 |
| Gogebic | 1,157 | 85 | 34 | 14 | 3 | X | X | 272 | 127 | 41 | 472 | 109 |
| Houghton | 805 | 59 | 29 | 38 | 11 | 2 | 10 | 130 | 110 | 23 | 302 | 91 |
| Iron | 1,650 | 105 | 140 | 79 | 22 | 4 | 14 | 728 | 174 | 22 | 288 | 74 |
| Keweenaw | 109 | -- | -- | -- | -- | -- | -- | 39 | 16 | 2 | 41 | 11 |
| Marquette | 2,802 | 331 | 108 | 147 | 83 | 6 | 43 | 790 | 398 | 48 | 609 | 239 |
| Ontonagon | 1,547 | 16 | 6 | 3 | 1 | -- | -- | 952 | 60 | 26 | 317 | 166 |
| Total | 10,441 | 698 | 482 | 514 | 191 | 21 | 132 | 3,641 | 1,201 | 197 | 2,518 | 846 |
| **N. LOWER PENINSULA** | | | | | | | | | | | | |
| Alcona | 553 | 93 | X | 1 | -- | -- | -- | 349 | 39 | 32 | 22 | 17 |
| Alpena | 189 | 1 | -- | X | -- | -- | -- | 142 | 22 | 4 | 13 | 7 |
| Antrim | 91 | 18 | -- | -- | -- | -- | -- | 45 | 4 | 5 | 18 | 1 |
| Arenac | 59 | 2 | -- | -- | -- | -- | -- | 51 | 4 | 2 | -- | X |
| Bay | 1 | -- | -- | -- | -- | -- | -- | 1 | -- | -- | -- | -- |
| Benzie | 188 | 5 | -- | -- | -- | -- | -- | 84 | 6 | 35 | 43 | 15 |
| Charlevoix | 26 | 1 | -- | X | -- | -- | -- | 10 | 3 | 1 | 9 | 2 |
| Cheboygan | 856 | 58 | 3 | 15 | 1 | -- | 2 | 409 | 99 | 14 | 232 | 23 |
| Clare | 379 | 8 | -- | -- | -- | -- | -- | 297 | 11 | 39 | 22 | 2 |
| Crawford | 686 | 252 | 2 | 7 | X | -- | 1 | 261 | 19 | 91 | 49 | 4 |
| Emmet | 99 | 13 | X | 1 | X | -- | X | 69 | 5 | -- | 10 | 1 |
| Gladwin | 161 | 7 | -- | -- | -- | -- | -- | 125 | 8 | 8 | 11 | 2 |
| Grand Traverse | 271 | 53 | -- | -- | -- | -- | -- | 139 | 4 | 12 | 49 | 14 |
| Iosco | 140 | 15 | -- | -- | -- | -- | -- | 84 | 15 | 10 | 12 | 4 |
| Isabella | 160 | -- | -- | -- | -- | -- | -- | 153 | 1 | 3 | 2 | 1 |
| Kalkaska | 366 | 120 | -- | -- | -- | -- | -- | 191 | 6 | 11 | 33 | 5 |
| Lake | 722 | 60 | -- | -- | -- | -- | -- | 294 | 10 | 278 | 66 | 14 |
| Leelanau | 30 | -- | -- | -- | -- | -- | -- | 4 | 1 | 4 | 10 | 11 |
| Manistee | 394 | 7 | -- | -- | -- | -- | -- | 183 | 12 | 79 | 82 | 31 |
| Mason | 264 | -- | -- | -- | -- | -- | -- | 154 | 6 | 46 | 43 | 15 |
| Mecosta | 220 | 1 | -- | -- | -- | -- | -- | 171 | 5 | 20 | 17 | 6 |
| Midland | 120 | 1 | -- | -- | -- | -- | -- | 87 | 7 | 8 | 10 | 7 |
| Missaukee | 490 | 23 | -- | -- | -- | -- | -- | 351 | 14 | 39 | 46 | 17 |
| Montmorency | 433 | 27 | X | 1 | X | -- | X | 258 | 76 | 37 | 27 | 7 |
| Newaygo | 299 | 1 | -- | -- | -- | -- | -- | 191 | 3 | 72 | 28 | 4 |
| Oceana | 266 | -- | -- | -- | -- | -- | -- | 178 | 3 | 61 | 20 | 4 |
| Ogemaw | 178 | 10 | -- | -- | -- | -- | -- | 116 | 16 | 24 | 11 | 1 |
| Osceola | 339 | 11 | -- | -- | -- | -- | -- | 231 | 12 | 30 | 43 | 12 |
| Oscoda | 491 | 173 | -- | 1 | -- | -- | -- | 209 | 27 | 51 | 20 | 10 |
| Otsego | 195 | 65 | -- | -- | -- | -- | -- | 72 | 15 | 5 | 35 | 3 |
| Presque Isle | 456 | 33 | 6 | 12 | -- | -- | -- | 281 | 55 | 7 | 44 | 18 |
| Roscommon | 423 | 180 | -- | 1 | -- | -- | -- | 193 | 5 | 24 | 20 | X |
| Wexford | 317 | 72 | -- | -- | -- | -- | -- | 147 | 11 | 27 | 37 | 23 |
| Total | 9,862 | 1,310 | 11 | 39 | 1 | -- | 3 | 5,530 | 524 | 1,079 | 1,084 | 281 |
| **S. LOWER PENINSULA** | | | | | | | | | | | | |
| Allegan | 64 | -- | -- | -- | -- | -- | -- | 4 | -- | 36 | 10 | 14 |
| Barry | 17 | -- | -- | -- | -- | -- | -- | 2 | X | 9 | 3 | 3 |
| Calhoun | 40 | -- | -- | -- | -- | -- | -- | 22 | -- | 16 | 2 | -- |
| Cass | 1 | -- | -- | -- | -- | -- | -- | -- | -- | 1 | -- | -- |
| Gratiot | 4 | -- | -- | -- | -- | -- | -- | 4 | -- | -- | -- | -- |
| Ingham | X | -- | -- | -- | -- | -- | -- | X | -- | -- | -- | -- |
| Ionia | 12 | -- | -- | -- | -- | -- | -- | 8 | -- | 2 | 1 | 1 |
| Kalamazoo | 30 | -- | -- | -- | -- | -- | -- | 2 | -- | 17 | 5 | 6 |
| Kent | 31 | -- | -- | -- | -- | -- | -- | 14 | X | 11 | 4 | 2 |
| Montcalm | 104 | X | -- | -- | -- | -- | -- | 84 | X | 16 | 3 | 1 |
| Muskegon | 174 | 1 | -- | -- | -- | -- | -- | 20 | X | 123 | 26 | 4 |
| Ottawa | 20 | -- | -- | -- | -- | -- | -- | 1 | -- | 12 | 3 | 4 |
| St. Joseph | 15 | -- | -- | -- | -- | -- | -- | -- | -- | 13 | 2 | -- |
| Van Buren | 28 | -- | -- | -- | -- | -- | -- | 2 | -- | 16 | 4 | 6 |
| Total | 540 | 1 | -- | -- | -- | -- | -- | 163 | X | 272 | -- | -- |
| **STATE TOTAL** | 28,523 | 2,534 | 1,152 | 1,435 | 423 | 56 | 377 | 11,041 | 2,795 | 1,639 | 4,015 | 1,712 |

*(Table 1 continued on next page)*

*(Table 1 continued)*

**MINNESOTA**

| Unit 1/ and County | All species | Pine | Spruce | Balsam fir | Hem-lock | Tam-arack | Cedar | Aspen | Birch | Oak | Maple | Other hardwoods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ASPEN-BIRCH** | | | | | | | | | | | | |
| Carlton | 544 | 14 | 27 | 121 | -- | X | -- | 296 | 50 | -- | 9 | 27 |
| Cook | 651 | 64 | 171 | 103 | -- | 0 | -- | 313 | -- | -- | -- | X |
| Koochiching | 2,602 | 146 | 530 | 288 | -- | 13 | -- | 1,539 | -- | -- | -- | 86 |
| Lake | 1,152 | 54 | 167 | 97 | -- | 1 | -- | 715 | 106 | -- | 1 | 11 |
| St.louis | 4,913 | 381 | 404 | 567 | -- | 5 | -- | 3,300 | 53 | -- | 31 | 172 |
| Total | 9,862 | 659 | 1,299 | 1,176 | -- | 19 | -- | 6,163 | 209 | -- | 41 | 296 |
| **NORTHERN PINE** | | | | | | | | | | | | |
| Aitkin | 806 | 3 | 14 | 68 | -- | -- | -- | 657 | X | -- | 3 | 61 |
| Becker | 590 | 4 | 2 | 13 | -- | -- | -- | 569 | -- | -- | -- | 2 |
| Beltrami | 1,462 | 79 | 58 | 125 | -- | 1 | -- | 1,193 | -- | -- | -- | 6 |
| Cass | 1,387 | 83 | 15 | 74 | -- | -- | -- | 1,209 | -- | -- | -- | 6 |
| Clearwater | 788 | 19 | 10 | 23 | -- | 1 | -- | 733 | -- | -- | -- | 2 |
| Crow Wing | 506 | 48 | 2 | 6 | -- | -- | -- | 447 | -- | -- | -- | 3 |
| Hubbard | 730 | 41 | 5 | 5 | -- | -- | -- | 677 | -- | -- | -- | 2 |
| Itasca | 4,151 | 95 | 190 | 478 | -- | 1 | -- | 3,290 | 17 | -- | 19 | 61 |
| Lake Of The Woods | 254 | 131 | 21 | 8 | -- | 26 | -- | 68 | -- | -- | -- | X |
| Mahnomen | 151 | -- | -- | -- | -- | 0 | -- | 150 | -- | -- | -- | 1 |
| Roseau | 145 | 117 | 9 | -- | -- | -- | -- | 19 | -- | -- | -- | X |
| Wadena | 94 | 9 | -- | 1 | -- | -- | -- | 83 | -- | -- | -- | 1 |
| Total | 11,064 | 629 | 326 | 801 | -- | 29 | -- | 9,095 | 17 | -- | 22 | 145 |
| **CENTRAL HARDWOOD** | | | | | | | | | | | | |
| Kanabec | 35 | -- | -- | -- | -- | -- | -- | 35 | -- | -- | -- | -- |
| Mille Lacs | 288 | 1 | -- | -- | -- | -- | -- | 287 | -- | -- | -- | X |
| Morrison | 45 | 1 | -- | -- | -- | -- | -- | 44 | -- | -- | -- | X |
| Pine | 498 | 10 | 1 | 6 | -- | -- | -- | 436 | 9 | -- | 6 | 30 |
| Sherburne | 16 | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Todd | 8 | 1 | -- | -- | -- | -- | -- | 7 | -- | -- | -- | -- |
| Total | 890 | 29 | 1 | 6 | -- | -- | -- | 809 | 9 | -- | 6 | 30 |
| **PRAIRIE** | | | | | | | | | | | | |
| Pennington | 2 | -- | -- | -- | -- | -- | -- | 2 | -- | -- | -- | -- |
| Polk | 28 | -- | -- | -- | -- | -- | -- | 28 | -- | -- | -- | -- |
| Red Lake | 1 | -- | -- | -- | -- | -- | -- | 1 | -- | -- | -- | -- |
| Sibley | X | X | -- | -- | -- | -- | -- | 0 | -- | -- | -- | -- |
| Total | 31 | X | -- | -- | -- | -- | -- | 31 | -- | -- | -- | -- |
| **STATE TOTAL** | 21,847 | 1,317 | 1,626 | 1,983 | -- | 48 | -- | 16,098 | 235 | -- | 69 | 471 |

*(Table 1 continued on next page)*

*(Table 1 continued)*

**WISCONSIN**

| Unit 1/ and County | All species | Pine | Spruce | Balsam fir | Hemlock | Tamarack | Cedar | Aspen | Birch | Oak | Maple | Other hardwoods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NORTHEAST** | | | | | | | | | | | | |
| Florence | 957 | 102 | 40 | 55 | 28 | 3 | -- | 416 | 109 | 14 | 156 | 34 |
| Forest | 1,393 | 130 | 66 | 97 | 24 | 3 | -- | 430 | 174 | 35 | 329 | 105 |
| Langlade | 1,013 | 69 | 10 | 33 | 6 | X | -- | 410 | 132 | 25 | 254 | 74 |
| Lincoln | 1,427 | 58 | 12 | 26 | 22 | 4 | -- | 808 | 119 | 30 | 253 | 95 |
| Marinette | 1,705 | 301 | 46 | 51 | 198 | 4 | -- | 640 | 244 | 12 | 170 | 39 |
| Menominee | 391 | 75 | 2 | 1 | 54 | -- | -- | 92 | 28 | 4 | 99 | 36 |
| Oconto | 966 | 202 | 1 | 9 | 1 | -- | -- | 459 | 117 | 10 | 137 | 30 |
| Oneida | 1,497 | 323 | 66 | 79 | 16 | 5 | -- | 474 | 248 | 44 | 194 | 48 |
| Shawano | 312 | 57 | 1 | 1 | 3 | X | -- | 78 | 43 | 6 | 103 | 20 |
| Vilas | 1,233 | 177 | 27 | 30 | 5 | 1 | -- | 565 | 242 | 18 | 135 | 33 |
| Total | 10,894 | 1,494 | 271 | 382 | 357 | 20 | -- | 4,372 | 1,456 | 198 | 1,830 | 514 |
| **NORTHWEST** | | | | | | | | | | | | |
| Ashland | 1,091 | 77 | 54 | 60 | 5 | 4 | -- | 440 | 143 | 26 | 220 | 62 |
| Barron | 351 | 4 | -- | -- | -- | -- | -- | 296 | 26 | 16 | 5 | 4 |
| Bayfield | 1,660 | 180 | 2 | 17 | X | -- | -- | 1,035 | 223 | 30 | 136 | 37 |
| Burnett | 529 | 200 | 3 | X | -- | 1 | -- | 278 | 26 | 9 | 9 | 3 |
| Douglas | 1,243 | 354 | 19 | 95 | X | 1 | -- | 510 | 182 | 3 | 63 | 16 |
| Iron | 781 | 8 | 1 | 3 | 1 | -- | -- | 497 | 100 | 10 | 129 | 32 |
| Polk | 115 | 4 | -- | -- | -- | -- | -- | 103 | 2 | 4 | 1 | 1 |
| Price | 1,454 | 72 | 31 | 46 | 14 | 7 | -- | 575 | 208 | 36 | 330 | 135 |
| Rusk | 798 | 26 | 1 | 1 | 1 | 1 | -- | 448 | 88 | 47 | 119 | 66 |
| Sawyer | 1,653 | 83 | 23 | 27 | 4 | 1 | -- | 818 | 281 | 63 | 264 | 89 |
| Taylor | 913 | 63 | 25 | 31 | 25 | 6 | -- | 311 | 107 | 18 | 247 | 80 |
| Washburn | 807 | 131 | -- | 4 | -- | -- | -- | 421 | 128 | 47 | 53 | 23 |
| Total | 11,395 | 1,202 | 159 | 284 | 50 | 21 | -- | 5,732 | 1,514 | 309 | 1,576 | 548 |
| **CENTRAL** | | | | | | | | | | | | |
| Adams | 504 | 432 | -- | -- | -- | X | -- | 23 | 5 | 29 | 12 | 3 |
| Chippewa | 409 | 46 | 5 | 1 | 1 | 1 | -- | 226 | 42 | 20 | 48 | 19 |
| Clark | 823 | 96 | 1 | X | X | -- | -- | 406 | 82 | 28 | 155 | 55 |
| Eau Claire | 228 | 73 | -- | -- | X | -- | -- | 66 | 51 | 12 | 20 | 6 |
| Jackson | 585 | 327 | 2 | -- | X | -- | -- | 124 | 28 | 39 | 57 | 8 |
| Juneau | 499 | 400 | X | X | -- | X | -- | 24 | 12 | 34 | 22 | 7 |
| Marathon | 917 | 83 | 4 | 6 | 16 | 1 | -- | 484 | 51 | 13 | 166 | 93 |
| Marquette | 142 | 103 | X | -- | -- | X | -- | 5 | 10 | 3 | 17 | 4 |
| Monroe | 189 | 139 | -- | -- | -- | X | -- | 2 | 12 | 11 | 18 | 7 |
| Portage | 338 | 160 | X | 1 | 5 | X | -- | 86 | 20 | 9 | 45 | 12 |
| Waupaca | 217 | 95 | 1 | 1 | 2 | 1 | -- | 57 | 7 | 5 | 39 | 9 |
| Waushara | 375 | 338 | 4 | -- | -- | X | -- | 8 | 3 | 8 | 11 | 3 |
| Wood | 638 | 166 | 1 | -- | 1 | -- | -- | 326 | 29 | 23 | 69 | 23 |
| Total | 5,864 | 2,458 | 18 | 9 | 25 | 3 | 0 | 1,837 | 352 | 234 | 679 | 249 |
| **SOUTHWEST** | | | | | | | | | | | | |
| Buffalo | 10 | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Crawford | X | X | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dunn | 122 | 66 | -- | -- | -- | -- | -- | 50 | 3 | X | 2 | 1 |
| Grant | 4 | 4 | -- | -- | -- | -- | -- | -- | X | -- | X | X |
| Iowa | 16 | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Lacrosse | 38 | 35 | X | -- | -- | -- | -- | 2 | X | X | 1 | X |
| Pepin | 3 | 3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pierce | 6 | 2 | 2 | -- | -- | -- | -- | 1 | X | X | 1 | X |
| Richland | 5 | 5 | -- | -- | -- | -- | -- | -- | X | X | X | X |
| St.croix | 93 | 27 | -- | -- | -- | -- | -- | 66 | -- | X | X | -- |
| Sauk | 49 | 48 | -- | -- | -- | -- | -- | -- | X | X | 1 | X |
| Trempealeau | 29 | 27 | X | -- | -- | -- | -- | -- | 1 | X | 1 | X |
| Vernon | 3 | 2 | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total | 378 | 245 | 3 | -- | -- | -- | -- | 119 | 4 | X | 6 | 1 |
| **SOUTHEAST** | | | | | | | | | | | | |
| Brown | X | X | -- | -- | -- | -- | -- | -- | X | X | X | X |
| Calumet | 2 | X | -- | -- | -- | -- | -- | -- | X | X | 2 | X |
| Columbia | 50 | 46 | -- | -- | -- | -- | -- | -- | 1 | 2 | 1 | X |
| Door | 3 | -- | -- | -- | -- | -- | -- | 2 | X | -- | 1 | X |
| Fond Du Lac | 3 | 3 | X | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Green | 4 | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Green Lake | 14 | 14 | -- | -- | -- | -- | -- | -- | X | -- | X | X |
| Jefferson | 4 | 4 | -- | -- | -- | -- | -- | -- | X | -- | X | X |
| Kewaunee | 1 | X | -- | -- | -- | -- | -- | -- | X | X | 1 | X |
| Manitowoc | 23 | 1 | -- | -- | -- | -- | -- | 2 | 2 | -- | 16 | 2 |
| Outagamie | 25 | 4 | -- | -- | -- | -- | -- | 13 | 1 | X | 6 | 1 |
| Ozaukee | X | X | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sheboygan | 16 | 14 | -- | -- | -- | -- | -- | -- | X | -- | 2 | X |
| Walworth | 1 | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Waukesha | 9 | 9 | -- | -- | -- | -- | -- | -- | X | -- | X | X |
| Total | 155 | 100 | X | -- | -- | -- | -- | 17 | 4 | 2 | 29 | 3 |
| **STATE TOTAL** | 28,686 | 5,499 | 451 | 675 | 432 | 44 | -- | 12,077 | 3,330 | 743 | 4,120 | 1,315 |
| **TOTAL LAKE STATES** | 79,056 | 9,350 | 3,229 | 4,093 | 855 | 148 | 377 | 39,216 | 6,360 | 2,382 | 8,204 | 3,498 |

*1/ Includes only those counties that supplied pulpwood in 1989.*

*X=Less than 50 cords.*